

Amendment and Response Under 37 C.F.R. 1.116

Applicant: Ray A. Walker

Serial No.: 10/044,476

Filed: January 10, 2002

Docket No.: 10019374-1

Title: METHOD AND APPARATUS FOR TRANSFERRING INFORMATION BETWEEN A PRINTER PORTION AND A REPLACEABLE PRINTING COMPONENT

IN THE CLAIMS

Please amend claims 1, 2, 4-7, 9-13, 15-23 and 25 as follows:

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1. (Currently Amended) An ink level sensing system for determining ink level in an ink reservoir and providing this ink level information to a printing system, the ink level sensing system comprising:

an ink reservoir having an interior space for containing ink, the ink reservoir having a radio frequency interface disposed therein within the interior space of the ink reservoir; and
a printing device configured for receiving the ink reservoir, the printing device including a radio frequency interface for receiving ink level information that is coupled through the ink reservoir by the radio frequency interface within the interior space of the ink reservoir.

2. (Currently Amended) The ink level sensing system of claim 1 further including a sensor electrically connected to the radio frequency interface disposed within the interior space of the ink reservoir, the sensor providing a sensor output signal indicative of ink level within the interior space of the ink reservoir to the radio frequency interface.

3. (Previously Amended) The ink level sensing system of claim 1 wherein the ink reservoir includes a sidewall and wherein the radio frequency interface includes an antenna for coupling a radio frequency signal through the sidewall to the printing system.

4. (Currently Amended) The ink level sensing system of claim 1 wherein the radio frequency interface within the interior space of the ink reservoir is enclosed in an encapsulant material and wherein the encapsulant material is at least partially surrounded by ink within the interior of the ink reservoir.

5. (Currently Amended) The ink level sensing system of claim 2 wherein the sensor is a pair of electrodes disposed within the interior space of the ink reservoir to measure electrical continuity through ink within the interior space of the ink reservoir.

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6. (Currently Amended) The ink level sensing system of claim 2 wherein the sensor is a pair of electrodes disposed within the interior space of the ink reservoir to measure electrical capacitance between the pair of electrodes.

Sub
D1
unit

7. (Currently Amended) A replaceable printing component for use in a printing system, the replaceable printing component for containing a supply of print material for use by the printing system to form images on media, the replaceable printing component comprising:

a reservoir having an interior space for containing printing material; and

a linking device disposed entirely within the interior space of the reservoir for emitting a signal indicative of printing material within the interior space of the reservoir wherein the reservoir is formed of a material so that the emitted signal passes through the reservoir for providing information to the printing system.

8. (Original) The replaceable printing component of claim 7 wherein the linking device is a radio frequency linking device for providing a radio frequency signal.

9. (Currently Amended) The replaceable printing component of claim 7 wherein the replaceable printing component is a replaceable ink reservoir and wherein the linking device includes a sensor that provides an output signal indicative of ink within the interior space of the ink reservoir and wherein the output signal is coupled to the printing system by the linking device.

10. (Currently Amended) The replaceable printing component of claim 7 wherein the replaceable printing component is a replaceable ink reservoir and wherein the linking device includes a sensor having a pair of electrodes disposed within the interior space of the ink reservoir to measure electrical continuity through ink within the interior space of the ink reservoir.

11. (Currently Amended) The ink level sensing system of claim 7 wherein the replaceable printing component is a replaceable ink reservoir and wherein the linking device

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includes a sensor having a pair of electrodes that are disposed within the interior space of the ink reservoir to measure capacitance between the pair of electrodes.

12. (Currently Amended) The ink level sensing system of claim 7 wherein the reservoir does not contain electrical conductors that extend from within the interior space of the reservoir to a location outside the reservoir.

13. (Currently Amended) A printing system having a printer portion and at least one replaceable print material reservoir, the printer portion and the at least one replaceable print material reservoir exchanging information therebetween, the printing system comprising:

a first wireless link associated with the replaceable print material reservoir, the first wireless link disposed entirely within an interior space for containing print material within the replaceable print material reservoir; and

a second wireless link associated with the printer portion, the second wireless link receiving replaceable reservoir information from the first wireless link by transmission of information in a wireless manner.

14. (Original) The printing system of claim 13 wherein the first wireless link is a radio frequency transmitter for transmitting a radio frequency signal and the second wireless link is a radio frequency receiver for receiving the radio frequency signal and determining the replaceable reservoir information based thereon.

15. (Currently Amended) The printing system of claim 13 wherein the replaceable print material reservoir is a replaceable ink reservoir and wherein the replaceable reservoir information is ink level information for the replaceable ink reservoir.

16. (Currently Amended) The printing system of claim 13 wherein the first wireless link includes a pair of electrodes disposed ~~in~~ within the interior space of the replaceable print material reservoir to measure electrical continuity of ink within the replaceable print material reservoir.

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17. (Currently Amended) The printing system of claim 13 wherein the first wireless link includes a pair of electrodes disposed ~~in~~ within the interior space of the replaceable print material reservoir to measure capacitance between the pair of electrodes.

18. (Currently Amended) The printing system of claim 13 where the printer portion is an ink jet printer and wherein the replaceable print material reservoir contains ink.

19. (Currently Amended) A method for transferring status information from an ink reservoir ~~a replaceable printing component~~ to a printer portion, the method comprising:

determining status information of the ink reservoir ~~replaceable printing component~~ using a sensor disposed ~~within the replaceable printing component~~ an interior space of the ink reservoir, the interior space of the ink reservoir for containing ink; and

transferring status information using a wireless link from the interior space of the ink reservoir ~~through a sidewall of the ink reservoir replaceable printing component~~ to the printer portion.

20. (Currently Amended) The method of claim 19 wherein ~~the replaceable printing component is an ink reservoir~~ and the printer portion is an ink jet printer and wherein the status information is ink level information in the ink reservoir.

21. (Currently Amended) The method of claim 19 wherein the transferring status information is accomplished by providing a radio frequency signal that couples through a sidewall of the ink reservoir ~~replaceable printing component~~.

22. (Currently Amended) A replaceable ink container for providing ink to an inkjet printing system, the replaceable ink container including:

a sensing system within an interior space of an ink reservoir for sensing parameters of ink ~~within an the ink container reservoir, the interior space of the ink reservoir for containing ink, and~~ wherein ink type within the replaceable ink container ~~ink reservoir~~ is determined by the inkjet printing system based on the sensed parameters.

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23. (Currently Amended) The replaceable ink container of claim 22 wherein the sensing system includes a pair of electrodes disposed in the ~~replaceable~~ interior space of the ink container-reservoir for measuring electrical continuity of ink within the ~~replaceable~~ ink container-reservoir.
24. (Original) The replaceable ink container of claim 22 wherein the sensing system includes a pair of electrodes for measuring capacitance between the pair of electrodes.
25. (Currently Amended) The replaceable ink container of claim 22 wherein the sensing system senses more than one parameter of ink within the ink ~~container-reservoir~~.
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